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EXAMINER

NORTON, JENNIFER L

ART UNIT PAPER NUMBER

2121

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/671,908

Applicant(s)

BROMLEY, CLIFTON HAROLD

Examiner

Jennifer L. Norton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/28/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a Final Office Action in response to the Amendment received on December 28, 2005. Claims 1-43 are pending.

Information Disclosure Statement

2. The Supplemental Information Disclosure Statement was received on December 28, 2005. The correction is not acceptable. There is no U.S. Patent Publication No.: 2004/010986 that corresponds to the inventor Nito et al. There is a U.S. Patent Publication No.: 2004/0104986 that corresponds to the inventor Nito et al. Appropriate correction is required.

Drawings

3. The amendment to the Specification was received on December 28, 2005. The correction is acceptable and the objection to the Drawings is withdrawn.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 1-11, 14-40 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Pub. No.: 2002/0120921 (referred to as Coburn hereinafter).

3. As per claim 1, Coburn discloses a system that facilitates generation of code from a HMI representation of objects in an industrial automation environment, comprising:

a component that analyzes the HMI representation of objects (pg. 6, par. [0069] and Fig. 90, element 9812), the analysis based at least in part on a relatedness of each object that comprises the HMI representation (pg. 6, par. [0069] and [0070] and pg. 32 par. [0448]); and

a code generation component that generates code based at least upon the analyzed HMI object (pg. 6, par. [0069] and Fig. 105, element 8007).

4. As per claim 2, Coburn discloses a control code that governs actions of industrial components (pg. 6, par. [0070]).

5. As per claim 3, Coburn discloses the code being at least one of ladder diagrams, function block diagrams, structured text, instruction lists, and sequential function charts (pg. 50, par. [0672], Fig. 1B and pg. 52, par. [0690]).

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6. As per claim 4, Coburn discloses the code is relayed to at least one industrial component comprising a processing device (pg. 11, par. [0197] and Fig. 90, element 9814).

7. As per claim 5, Coburn discloses the processing device as being a programmable logic controller (pg. 11, par. [0197] and Fig. 90, element 9814).

8. As per claim 6, Coburn discloses a library of disparate HMI objects (pg. 14, par. [0237] and [0238]).

9. As per claim 7, Coburn discloses the HMI representation of objects comprises one or more HMI objects of the library (pg. 14, par. [0237] and [0238]).

10. As per claim 8, Coburn discloses an editing component that enables editing of the HMI representation of objects (pg. 6, par. [0073], pg. 23, par. [0353] and [0354], pg. 25, par. [0377] and Figure 90, elements 9802 and 9806).

11. As per claim 9, Coburn discloses the editing component comprising of a modifiable template (pg. 6, par. [0073] and pg. 14, par. [0241]).

12. As per claim 10, Coburn discloses a HMI comprising the system set forth in claim 1 (pg. 38, par. [0520] and Fig. 90, element 8437).

13. As per claim 11, Coburn discloses the HMI being a fixed HMI (pg. 38, par. [0520] and Fig. 90, element 8437).

14. As per claim 14, Coburn discloses the code generation component comprises an intelligent component that automatically generates code of a program language desired by a user (pg. 6, par. [0070] and Fig. 90, element 9812)

15. As per claim 15, Coburn discloses the code generation component comprises an intelligent component that automatically compiles code in an executable code format according to a processing device that receives the executable code (pg. 6, par. [0070] and [0071] and Fig. 90, element 9812).

16. As per claim 16, Coburn discloses the code generation component outputs control code in a universal language, the control code automatically translated to a program language desired by a user by a first intelligent component, and the control code compiled into an executable code format according to a processing device that receive the executable code (pg. 6, par. [0070] and [0071]).

17. As per claim 17, Coburn discloses a system that facilitates industrial automation, comprising:

one or more HMI objects representing at least one of

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an industrial component and

an industrial action (pg. 6, par. [0066] and [0067]);

an arrangement of the one or more HMI objects that represent at least one of

an industrial system comprising at least one industrial component (pg. 6, par. [0066]) and

an industrial process comprising at least one industrial action (pg. 6, par. [0067] and [0069]); and

a code generation component that generates code based at least in part upon the arrangement of HMI objects (pg. 6, par. [0069], [0070] and [0071]) and an associative relationship between each of the one or more HMI objects that comprise the arrangement (pg. 6, par. [0069] and [0070] and pg. 32, par. [0448]).

18. As per claim 18, Coburn discloses an editing component that enables editing of the one or more HMI objects (pg. 6, par. [0073], pg. 23, par. [0353] and [0354], pg. 25, par. [0377] and Figure 90, elements 9802 and 9806).

19. As per claim 19, Coburn discloses the editing component comprising a modifiable template (pg. 14, par. [0241] and pg. 6, par. [0073]).

20. As per claim 20, Coburn discloses the editing component as facilitating multi-user development (pg. 48-49, par. [0649]).

21. As per claim 21, Coburn discloses a creation component that enables creating HMI objects (pg. 47, par. [0621] and [0625]).

22. As per claim 22, Coburn discloses the creation component comprising a modifiable template (pg. 47, par. [0626] and [0627]).

23. As per claim 23, Coburn discloses the modifiable template employing graphical representations of HMI objects (pgs. 47-48, par. [0630] and [0633]).

24. As per claim 24, Coburn discloses the modifiable template comprising a nested template (pg. 47, par. [0626] and [0627]).

25. As per claim 25, Coburn discloses modification of the modifiable template effectuates altering one or more objects generated by the modifiable template (pg. 47, par. [0626] and [0627]).

26. As per claim 26, Coburn discloses an object generator that automatically generates the HMI objects (pg. 6, [0069] and [0070]).

27. As per claim 27, Coburn discloses the object generator utilizing artificial intelligence techniques to infer existence of one or more components within the industrial system (pg. 6, par. [0069]). The automatic generation of rules is considered to

be as artificial intelligence technique within the meaning as set in the applicant's disclosure.

28. As per claim 28, Coburn discloses the object generator utilizing artificial intelligence techniques to infer existence of one or more actions within the industrial process (pg. 6, par. [0069] and [0070]). The automatic generation of rules is considered to be as artificial intelligence technique within the meaning as set in the applicant's disclosure.

29. As per claim 29, Coburn discloses the object generator as receiving data comprising:

information relating to at least one of
the industrial system; and
the industrial process (pg. 6, par. [0066] and [0067]); and
generating HMI objects based at least in part on the data (pg. 6, par [0069] and [0070]).

30. As per claim 30, Coburn discloses the arrangement of HMI objects displayed as a single HMI object (pg. 6, par. [0069]).

31. As per claim 31, Coburn discloses a library of disparate HMI objects (pg. 14, par. [0237] and [0238]).

32. As per claim 32, Coburn discloses the arrangement HMI objects comprising at least one input and at least one output (pg. 6, par. [0067] and [0069]).

33. As per claim 33, Coburn discloses a connection mechanism that facilitates connecting HMI objects (pg. 6, par. [0069]).

34. As per claim 34, Coburn discloses the system set embodied in a computer readable medium (pg. 46-47, par. [0620] and Fig. 1A, element 20).

35. As per claim 35, Coburn discloses a system that automatically generates code to facilitate industrial automation, comprising:

means for receiving at least one HMI object for analysis, the HMI object representing one or more of

an industrial component (pg. 6, par. [0066]) and

a particular action of an industrial process (pg. 6, par. [0068]);

means for arranging the at least one HMI object to represent one or more of

an industrial system (pg. 6, par. [0069]) and

an industrial process (pg. 6, par. [0068]); and

means for generating code based on the arrangement of the at least one HMI object (pg. 6, par. [0069], [0070], and [0071]) and the analysis of an

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interrelationship between the at least one HMI object that comprises the arrangement (pg. 6, par. [0069] and [0070] and pg. 32, par. [0448]).

36. As per claim 36, Coburn discloses the system further comprising means for creating the HMI objects (pg. 47, par. [0621] and [0625]).

37. As per claim 37, Coburn discloses a means for editing the HMI objects (pg. 6, par. [0073], pg. 23, par. [0353] and [0354], pg. 25, par. [0377] and Figure 90, elements 9802 and 9806).

38. As per claim 38, Coburn discloses a means for relaying the code to one or more processing devices (pg. 31, par. [0436] and Fig. 90, element 8323).

39. As per claim 39, Coburn discloses a method for automatically generating code to govern actions of an industrial system and/or process comprising:

receiving a HMI representation of at least one of

an industrial system, and

an industrial process (pg. 6, [0068]); and

automatically generating code based at least in part upon an

interconnectedness analysis representation (pg. 6, par. [0069] and [0070] and pg. 32, par. [0448]).

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40. As per claim 40, Coburn discloses the method set forth above, further comprising:

automatically generating the representation of the industrial system and/or process by utilizing artificial intelligence techniques (pg. 6, [0069] and pg. 47, par. [0622]). The automatic generation of rules is considered to be as artificial intelligence technique within the meaning as set in the applicant's disclosure.

41. As per claim 43, Coburn discloses a data packet that passes between at least two computer processes, comprising:

a graphical representation of at least one of

an industrial system and

an industrial process (pg. 6, par. [0066])

wherein the graphical representation is utilized to automatically generate code to govern the actions of at least one industrial component (pg. 6, par. [0069] and [0070]), the generation of code based at least in part on an analysis of relatedness of one or more objects that comprise the industrial system and the industrial process (pg. 6, par. [0069] and [0070] and pg. 32, par. [0448]).

Claim Rejections - 35 USC § 103

42. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

43. Claims 12-13 and 41-42 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Pub. No.: 2002/0220921 (referred to as Coburn hereinafter) in view of U.S Patent Pub. No.: 2004/0260518 (referred to Polz hereinafter).

44. As per claim 12, Coburn does not expressly teach the HMI being a tethered HMI.

Polz teaches a HMI unit constitutes a notebook, which is connected to the intranet of a facility (pg. 2, par. [0022]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include a tethered HMI. A tethered portable HMI is advantageously mobile (pg. 2, par. [0022]).

45. As per claim 13, Coburn does not expressly teach the HMI being a wireless HMI (pg. 2, par. [0024]).

Polz teaches a HMI unit can be a mobile radio telephone or cell phone.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include a wireless

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HMI. A wireless HMI offers the advantage of identifying the nearest automation component to a service technician that he is situated in front of (pg. 2, par [0026]).

46. As per claim 41, Coburn does not expressly teach the method further comprising:
automatically generating the representation of the industrial system and/or
process by utilizing plug-and-play technologies.

Polz teaches to a plug-and-play cable links between an object and automation component (pg. 2, par. [0025]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to modify the teaching of Coburn to include plug-and-play technologies. Plug and play is advantageous because it provides automatic configuration of hardware devices without have to restart the computer and assures the user that hardware devices can be installed without resorting to manual hardware configuration of either the device or the PC into which the device is being installed.

47. As per claim 42, Coburn teaches arranging HMI objects that represent at least one of

an industrial system (pg. 6, par. [0066]); and

an industrial process (pg. 6, par. [0067] and [0069]);

to create the representation of the industrial system and/or process (pg. 6, par. [0069], [0070], and [0071]).

Response to Arguments

4. Applicant's arguments, see Remarks pg. 9-10, filed December 28, 2005, with respect to the rejection(s) of claims 1-11, 14-40 and 43 under U.S.C. 102(b) have been fully considered but they are not persuasive.

The Coburn reference discloses (see pg. 6, par. [0069] and [0070]), "an inventive compiler used to compile all of the information in the CAS and to generate several different types of information. To this end, the compiler compiles the schematic diagrams of the separate control devices, linking the devices according to a schematic rule set (SRS) to generate a complete schematic illustrating all line control devices, controllers and electrical and hydraulic links there between."

The Coburn reference discloses (see pg. 32, par. [0448]), "compiler 8007 receives logic, HMI and diagnostic specifications and the S/I table for a specific CA instance, gleans information therefrom and applies a set of rules to the gleaned information to generate parameterized execution code segments and to form PLC I/O table sections for each bar chart 5830 request. Parameterized code segments are appended to each other in sequential order to form complete execution code 2009 for controlling the control process defined by bar chart 5830 and associated CA instances.

Referring also to FIG. 102, the PLC I/O table sections are combined to form complete PLC I/O table 2011.”

In accordance with the limitations “relatedness”, “associative relationship”, “analysis of an interrelationship”, “interconnectedness analysis” and “analysis of relatedness” the examiner has taken reference from the specification, pg. 10, lines 11-13 since no definitive definition has been set forth for these limitations. Hence, the examiner emphasizes that all anticipated components and limitations of pending claims are present in Coburn as supported above.

5. Applicant's arguments, see Remarks pg. 10-11, filed December 28, 2005, with respect to the rejection(s) of claims 12-13, and 41-42 under U.S.C. 103(a) have been fully considered but they are not persuasive.

The Coburn reference discloses (see pg. 6, par. [0069] and [0070]), “an inventive compiler used to compile all of the information in the CAS and to generate several different types of information. To this end, the compiler compiles the schematic diagrams of the separate control devices, linking the devices according to a schematic rule set (SRS) to generate a complete schematic illustrating all line control devices, controllers and electrical and hydraulic links there between.”

The Coburn reference discloses (see pg. 32, par. [0448]), “compiler 8007 receives logic, HMI and diagnostic specifications and the S/I table for a specific CA instance, gleans information therefrom and applies a set of rules to the gleaned information to generate parameterized execution code segments and to form PLC I/O table sections for each bar chart 5830 request. Parameterized code segments are appended to each other in sequential order to form complete execution code 2009 for controlling the control process defined by bar chart 5830 and associated CA instances. Referring also to FIG. 102, the PLC I/O table sections are combined to form complete PLC I/O table 2011.”

In accordance with the limitations “relatedness” and interconnectedness analysis” examiner has taken reference from the specification, pg. 10, lines 11-13 since no definitive definition has been set forth for these limitations. Hence, the examiner emphasizes that all anticipated components and limitations of pending claims are present in Coburn as supported above.

6. Applicant's arguments, see Remarks pg. 10, filed December 28, 2005, with respect to the rejection(s) of claims 43 under U.S.C. 103(a), intended to fall within the preview of U.S.C. 102(b) and not U.S.C 103(a). The applicant's argument to claim 43 premised under U.S.C 102(b) was correct. Applicant's arguments, see Remarks pg. 10-11, filed December 28, 2005, with respect to the rejection(s) of claims 43 under U.S.C. 102(b) have been fully considered but they are not persuasive, as supported above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer L. Norton whose telephone number is 571-272-3694. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571-272-3687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.65

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Anthony Knight", is positioned above the printed name.

Anthony Knight
Supervisory Patent Examiner
Art Unit 2121